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RIBES OF OREGON

BY

L. N. GOODING

1926

RUSTS OCCURRING ON RIBES IN THE WEST

By

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U. S. DEPARTMENT OF AGRICULTURE

BUREAU OF PLANT INDUSTRY

OFFICE OF BLISTER RUST CONTROL

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In a regional study of white pine blister rust it is important to know what currants and gooseberries grow in that particular section, as any and all of them are subject to this disease and are capable of transferring it to white pines. Not all are of equal importance; some are abundant and others are rare; but the factor of abundance, while important, is not the only one to consider. Susceptibility to the disease, exposure to winds, condition of humidity, size of the bushes and amount of leaf surface, and association with pines and other currants and gooseberries all have to be considered. The following discussion is intended to give some idea of the range, abundance, and habitat of the several species. No serious consideration of susceptibility is given, as years of careful work will be required to determine this with accuracy.

The keys and descriptions of the currants and gooseberries and the rusts which occur on them given here are intended for the use of blister rust scouts, forest rangers, county fruit inspectors, fire wardens, and others doing blister rust work in the state of Oregon.

The cultivated varieties of currants and gooseberries are not considered here. A careful treatment of them would require a study of the different varieties and forms in cultivation within the state and this would doubtless reveal that they are similar to those of other sections where small fruits are extensively grown. Persons wishing information about these are referred to Bailey's Standard Cyclopeda of Horticulture or the New York State Agricultural Experiment Station, Geneva, Technical Bulletin No. 109. RIBES NIGRUM (the cultivated black currant) alone among the tame varieties is considered. This is because it is particularly significant in white pine blister rust control, has been declared a nuisance by law, and is sometimes

confused with other currants and thus overlooked.

Both currants and gooseberries are generally referred to as Ribes, though technically the two constitute the separate genera RIBES and GROSSULARIA. Those who are not familiar with the group may confuse other plants with them. To avoid this it is only necessary to compare the plant in question with the following points, common to all currants and gooseberries of Oregon.

1. - All have woody stems.
2. - All have simple alternate leaves (a simple leaf has but one blade, which may be deeply lobed or toothed but not divided into separate smaller blades).
3. - The sepals or outer whorl of leaves of the flower are the conspicuous part of the flower. See drawing, page 16.
4. - The sepals are united at their bases to form a tube called the hypanthium, which may be very short or vary to $\frac{1}{2}$ inch or more in length.
5. - The hypanthium or tube of the flower is borne on top of the ovary or fruit and not at its base. It and the sepals dry in place and do not fall from the berry.
6. - The petals are smaller than the sepals and are borne in the mouth of the tube.
7. - There are 5 sepals, 5 petals, and 5 stamens in each flower.
8. - The style, borne in the exact center of the flower, is either single or divided more or less completely into two parts.
9. - The fruit is true berry with the hypanthium drying on its top. It is never divided into rounded lobes or segments like the raspberry.

The currants and gooseberries can be separated by observing that:

1. - The true gooseberries, GROSSULARIA, always have spines at the nodes on at least some of the stems or branches. These maybe small and weak but they are never totally absent. Three Oregon species are often nearly spineless. The berry in breaking off always has an evident stem left attached to it. Not all spiny members of this group

are gooseberries, for two currants are also spiny.

2 - Most of the currants, RIBES, have neither spines nor prickles. In the two species which have spines the berries break from their stems in such manner that no stem or practically none is left attached to the berry. This is true of the other currants also. The flowers of the two spiny species are very short and the sepals are distinct nearly to the ovary. This is true of some other currants but not of gooseberries.

Where a descriptive word is confusing, refer to the glossary. The word may have a special meaning in the key. It is impossible to avoid the use of a few technical terms.

Do not rely too strongly on a single point in the key. All plants vary and it is impossible to make perfect keys to fit them. Two keys are given here. In the first the parts of the flower are omitted as far as possible, while in the second they are considered. If you are not sure of your determination check it by using the second key. Finally, the plant should be compared with the points given in the description. The Corvallis office will be glad to receive specimens of your RIBES and GROSSULARIA and check up your determinations for you. Send them to the Office of Blister Rust Control, Botany Department, O.A.C., Corvallis, Oregon.

A "specimen" of this group should be composed of a young shoot and some older wood with leaves, flowers, and fruits. It should bear a label telling when, where, and by whom it was collected and should be well pressed with the leaves flattened out. Specimens may be sent to the office fresh if provisions is made to keep them from drying. It is not always possible to obtain both flowers and fruits, but a determination can usually be made from one or the other.

The following keys are dichotomous, i. e., they always branch into two parts. In using either key start at the beginning. You will find here two parts under the first section. Your plant must fit one or the other. In either case you will find directions to pass to

some other section. For example, if your plant has spines it will go under the second part of section 1. This says pass to sec. 15. You pass to sec. 15, ignoring everything in the key up to that point. Now if your plant has stout spines and berries which break off in such fashion that stems are left attached to the berry it falls in the second part of this section where you are directed to pass to section 17. Ignore everything up to section 17.

If your plant has berries clothed with sticky hairs, or if they are smooth, it falls in the second part, which refers you to section 22. Here you choose the part which applies to your plant. If it has sticky hairs on the berries and leaves it is evidently *GROSSULARIA LOBBII*. You can confirm this by turning to the description and checking by it

See drawing of *RIBES BRACTEOSUM*. Here the names of the part of the flower are given. Remember all of the currant and gooseberry flowers have 5 sepals, 5 petals, and 5 stamens. Only a portion of the flower is illustrated in each case.

KEY TO *RIBES* AND *GROSSULARIA* IN OREGON.

Always start with section 1.

- Sec. 1. Bushes without spines on the stem or branches. Pass to sec. 2.
Bushes with spines on the stems or branches. Pass to sec. 15.
- Sec. 2. Leaves with numerous yellow or reddishbrown resin dots (resin dots are not stalked, nor does the term apply to the clear colorless glands without stalks found in certain groups) on the lower surface. Pass to sec. 3.
Leaves without resin dots but often with gland-tipped hairs called stalked glands. Pass to sec. 6.

Sec. 3. Ovaries (immature fruits) and fruits with resin dots.

Pass to sec. 4.

Ovaries and fruits without resin dots but with stalked glands. At altitudes of 3000 to 6000 feet throughout the Cascade Mountains. Turn to RIBES ACERIFOLIUM, page 22

Sec. 4. Flowers or fruits, many, in long clusters. Pass to sec. 5.

Flowers or fruits few to several, not forming long clusters. The cultivated black currant of gardens. Turn to R. NIGRUM, page 18.

Sec. 5. Leaves large, often more than 4 inches across, sometimes more than 1 foot, bearing 5 to 7 points; the lower bracts (leaf-like structures) of the flower clusters expanded into small leaves. Bushes with rank odor, growing along streams and in marshy places where the water runs freely, usually in the shade. Turn to R. BRACTEOSUM, page 17.

Leaves usually less than 4 inches across, 3 to 5 lobed or pointed; the lower bracts of the flower clusters not expanded into true leaves. Bushes with rank odor, along streams and in marshes in the timberlands of Oregon east of the Cascade Mountains and north of Mt. Hood. Turn to R. PETIOLARE, page 18.

Sec. 6. Bushes trailing or only partially erect. Pass to sec. 7.

Bushes erect or merely spreading. Pass to sec. 9.

Sec. 7. Fruits (berries) red. Pass to sec. 8.

Fruits black, bearing stalked glands. Plants of the shaded or semi-shaded timberlands of western Oregon. Turn to R. LAXIFLORUM, page 27.

Sec. 8. Bushes seldom more than 1 foot high, forming carpet on knolls and slopes at high altitudes of the southern Cascade Mountains. Turn to R. ERYTHOCARPUM, page 38.

The erect portion of the stem 2-4 ft. high; leaves usually more than 2 inches wide; shaded stream banks at altitudes from 3000 to 6000 ft. In Oregon this plant is probably confined to the northern end of the Cascade Mountains.

Turn to R. TRISTE, page 23.

Sec. 9. Fruits globular, smooth, red, yellow, or black, flowers yellow. Plants of exceedingly wide distribution throughout eastern Oregon and down the Columbia River to The Dalles or lower. Cultivated in many sections.

Turn to R. AUREUM, page 23.

Fruits clothed with stalked glands or sometimes smooth with age. (If fruit is oblong, smooth and ribbed see note under R. VISCOSISSIMUM, page 33) Pass to sec. 10.

Sec. 10. Fruits red, usually bearing stalked glands, occasionally smooth. The most common currant of the arid regions of eastern and southern Oregon. Turn to R. CEREUM, page 37.

Fruits black having stalked glands. Pass to sec. 11.

Sec. 11. Leaves distinctly hairy, especially below. Pass to sec. 12.

Leaves nearly smooth. Pass to sec. 14.

Sec. 12. Leaves smooth above or nearly so, but the under surface clothed with matted hairs or the veins clothed with abundant stalked glands. Pass to sec. 13.

Leaves distinctly hairy above and densely clothed with glandular hairs below. Plants of semi-open and open woods and burned-over areas, probably throughout the yellow pine regions of Oregon. Turn to R. VISCOSISSIMUM, page 33.

Sec. 13. Leaves smooth above or nearly so, clothed with dense matted hairs below. Turn to R. SANGUINEUM, page 32.

Leaves smooth above or nearly so, clothed along the veins below with abundant stalked glands. In Oregon probably confined to Lincoln, Douglas, Coos, and Curry Counties.

Turn to R. GLUTINOSUM, page 33.

Sec. 14. Flowers pink to red, conspicuous, leaves deep green above, nearly smooth. Along shaded streams in Jackson, Josephine, and Klamath Counties. Turn to R. NEVADENSE, page 32.

Flowers purplish white, inconspicuous; leaves with minute clear glands on the lower side. Turn to R. WOLFII, page 28.

Sec. 15. Low bushes with weak spines at the nodes (portion of the stem to which the leaf or side branch is attached); young shoots prickly; flowers or fruits several to many in a cluster; the fruit breaking from the fruit stalk by a joint close to the berry leaving it stemless or practically so.

Prickly currants.

Pass to Sec. 16.

Bushes with spines at the nodes, these occasionally stout; occasionally few and weak; young shoots prickly or smooth; flowers or fruits few to the cluster; the berry breaking from the fruit stalk well below the fruit, leaving a distinct stem attached. True gooseberries. Pass to sec. 17.

Sec. 16. Fruits black, leaves smooth, very widely distributed throughout the timbered sections of the State, along streams and wet and marshy places. Turn to R. LACUSTRE, page 43.

Fruits red; leaves clothed with gland-tipped hairs. Bushes of high altitudes often forming low matted clumps on exposed slopes and ridges. Turn to R. MONTIGENUM, page 38.

Sec. 17. Berries covered with stiff spines, these often tipped with glands. Pass to sec. 18.

Berries covered with stiff spines; either smooth, covered with stalked glands, or hairy. Pass to sec. 22.

Sec. 18. Leaves with abundant stalked glands beneath; young stems densely covered with fine purple or brown prickles. In Oregon probably confined to the southwestern portion of the State. Turn to G. MENZIESII, page 43.

Leaves smooth or hairy, but with few or no stalked glands; young stems not prickly. Pass to sec. 19

Sec. 19. Leaves very small, usually less than 1 inch across, smooth. A species which is abundant in the mountains in Lane County and southward. Turn to G. CRUENTA, page 44.

Leaves not conspicuously small, usually more than 1 inch across, hairy or clothed with stalked glands except in G. MARSHALLII. Pass to sec. 20.

Sec. 20. Spines on the fruits dark purple or brown. A gooseberry confined to a limited area of Jackson and Josephine Counties. Turn to G. MARSHALLII, page 50.

Spines on the fruits straw colored; leaves hairy beneath, sometimes with scattering stalked glands. Pass to sec. 21.

Sec. 21. Trailing shrubs of the forests and parks of Jackson and Josephine Counties. Turn to G. BINOMINATA, page 44.

Erect shrubs of semi-open forests, possibly confined in Oregon to the extreme northern end of the Cascades. Turn to G. WATSONIANA, page 49.

Sec. 22. Berries densely clothed with stalked glands, these making the fruits very sticky or gummy; leaves likewise sticky due to stalked glands. The gummy gooseberry of the open or burned-over areas from the crest of the Cascades westward. Possibly occurring on the east slopes of the Cascades also. Turn to G. LOBBII, page 49.

Berries smooth or hairy, without stalked glands.

Pass to sec. 23.

Sec. 23. Leaves conspicuously small, usually much less than an inch across, deeply 3-5 lobed, each lobe ending in three blunt teeth. The gooseberry of the desert region of eastern Oregon. Turn to G. VELUTINA, page 50.

Leaves not noticeably small, the mature ones 1 inch or more across. Pass to sec. 24.

Sec. 24. Leaves at their base wedge-shaped or straight across; smooth, shining; spines brown shining; stamens and pistils extending well beyond the rest of the flower. A species common in eastern Oregon on the Snake River and its tributaries.

Turn to G. NIVEA, page 54.

Leaves mostly heart-shaped at their base. Pass to sec. 25.

Sec. 25. Leaves more or less hairy below; interspersed with the hairs are very minute white stalked glands visible only with a hand lens. Pass to sec. 26.

Leaves smooth or nearly so (with sparse long hairs in G. KLAMATHENSIS) and without the minute white stalked glands.

Pass to sec. 27.

Sec. 26. Young shoots usually prickly (this does not refer to the spines at the nodes present in most gooseberries). Leaves

noticeably hairy and bearing stalked glands on both sides, tube of the flower cylinder-shaped. Common on the Umatilla River and its tributaries. Turn to G. COGNATA, page 55.

Young shoots usually smooth except for the spines at the nodes; leaves usually smooth above but hairy below and bearing stalked glands along the veins. Tube of flower bell-shaped. Widely distributed along streams in northeastern Oregon. Turn to G. IRRIGUA, page 55.

- Sec. 27. Stamens and pistils extended well beyond the end of the extended sepals (this is easily seen in the dried flower attached to the fruit). The common black gooseberry of western Oregon. Turn to G. DIVARICATA, page 59.

Stamens about equalling the extended sepals.

Pass to sec. 28.

- Sec. 28. Leaves smooth or nearly so; tube of the flower and the sepals smooth; berry wine-colored. Probably frequent along mountain streams in eastern Oregon. Turn to G. INERMIS, page 60.

Leaves with long but scattered hairs; tube of the flower and the sepals clothed with long sparse hairs; fruit black. widely distributed in southern Oregon and extremely abundant along streams and lake shores in the yellow pine belt. Turn to G. KLAMATHENSIS, page 60.

KEY IN WHICH THE PARTS OF THE FLOWER ARE CONSIDERED.

Start at the beginning of the key.

- Sec. 1. Plants without spines or prickles or if with them the flower saucer-shaped and the sepals distinct nearly to the ovary.

Fruit breaking from its stalk in such a manner that the berry is stemless or nearly so. Pass to sec. 2.

Plants with spines or with both spines and prickles. The flower having a distinct tube to which the sepals are attached, this tube portion, called the hypanthium, cylindrical or bell-shaped. Fruits breaking from their individual stalks in such a manner that a stem is left attached to the fruit. Pass to sec. 17.

Sec. 2. Plants with spines and prickles. Pass to sec. 3.

Plants without spines or prickles. Pass to sec. 4.

Sec. 3. Leaves smooth or nearly so; flower clusters 10-15 flowered; fruits black. Turn to RIBES LACUSTRE, page 43.

Leaves clothed with stalked glands; flower clusters 3-7 flowered; fruits red. Turn to R. MONTIGENUM, page 38.

Sec. 4. Ovaries with resin dots. Pass to sec. 5.

Ovaries without resin dots, with or without stalked glands. Pass to sec. 7.

Sec. 5. Leaves very large, mature ones 4 inches or more across; 5-7 lobed or pointed; lower bracts of the flower clusters expanded into small green leaves. Turn to R. BRACTEOSUM, page 17.

Leaves often large but less than 4 inches across, 3-5 lobed or pointed. Pass to sec. 6

Sec. 6. Flowers in a long cluster, the lower bracts not expanded into leaves. Turn to R. PETIOLARE, page 18.

Flowers few to several in short clusters.

Turn to R. NIGRUM, page 18.

- Sec. 7. Hypanthium (portion of the flower between the sepals and the ovary) extremely short, barely uniting the sepals at their bases: flower saucer-shaped. Pass to sec. 8.

Hypanthium evident, half the length of the sepals or more.

Pass to sec. 11.

- Sec. 8. Ovaries smooth, fruit red. Turn to R. TRISTE, page 23.

Ovaries with stalked glands, fruit usually black (red in R. ERYTHROCARPUM). Pass to sec. 9.

- Sec. 9. Extremely low trailing shrub (rarely 1 foot high), fruit red. Turn to R. ERYTHROCARPUM, page 38.

Shrub higher, 3-6 feet high; fruit black with a bloom (a white or grayish powdery appearance which is readily rubbed away). Pass to sec. 10.

- Sec. 10. Leaves with minute resin dots beneath.

Turn to R. ACERIFOLIUM, page 22.

Leaves without resin dots. Turn to R. LAXIFLORUM, page 27.

- Sec. 11. Anthers with a conspicuous cup-shaped gland at the extreme point. Pass to sec. 12.

Anthers with a mere cushion or callus at the extreme point.

Pass to sec 13.

- Sec. 12. Tube of the flower $2\frac{1}{2}$ - 4 times as long as broad; flower pink or red, rarely white. Turn to R. CEREUM, page 37.

Tube of the flower less than twice as long as broad, this due to the tube being expanded just above the ovary; flowers white, yellowish-white or green.

Turn to R. VISCOSSISSIMUM, page 33.

- Sec. 13. Tube of the flower smooth, golden yellow (occasionally streaked with red), 3-4 times as long as broad.
Turn to R. AUREUM, page 23.

Tube of the flower neither smooth nor golden yellow.

Pass to sec. 14.

- Sec. 14. Tube of the flower and extended sepals $\frac{1}{2}$ inch or less in length. Pass to sec. 15.

Tube of the flower and extended sepals $\frac{3}{8}$ - $\frac{1}{2}$ inch long.

Pass to sec. 16.

- Sec. 15. Leaves with small clear transparent glands without stalks, on the lower surface. Turn to R. WOLFII, page 28.

Leaves smooth above and nearly or quite so below.

Turn to R. NEVADENSE, page 32.

- Sec. 16. Leaves with matted hair on the lower side.
Turn to R. SANGUINEUM, page 32.

Leaves without matted hairs below, but with stalked glands, especially along the veins or sometimes nearly smooth.
Turn to R. GLUTINOSUM, page 33.

- Sec. 17. Anthers much broader at the base than at the tip, i. e., coming to a pronounced point. Pass to sec. 18.

Anthers not evidently broader at the base than at the tip.
Pass to Sec. 19.

Sec. 18. Tube of the flower about as long as broad, one-fourth to one-half the length of the sepals.

Turn to *GROSSULARIA MENZIESII*, page 43.

Tube of the flower much longer than broad, about one-half the length of the sepals. Turn to *G. CRUENTA*, page 44.

Sec. 19. Styles smooth throughout (see note) under *G. VELUTINA*, page 50. Pass to sec. 20.

Styles hairy at least toward the base. Pass to sec. 24.

Sec. 20. Flowers deep red or purple; filaments (stalks of the stamens) twice the length of the petals or more. Pass to sec. 21.

Flowers whitish, green, or yellow. Pass to sec. 22.

Sec. 21. Leaves densely clothed with stalked glands; ovary gummy and sticky, with stalked glands. Turn to *G. LOBBII*, page 49.

Leaves smooth above, ovary spiny.

Turn to *G. MARSHALLII*, page 50.

Sec. 22. Ovary densely bristly; the bristles developing into sharp spines. Pass to sec. 23.

Ovary not bristly. Turn to *G. VELUTINA* on page 50.

Sec. 23. Leaf blades without stalked glands but hairy on both faces; trailing shrubs. Turn to *G. BINOMINATA* on page 44.

Leaf blades with stout stalked glands; erect shrubs.

Turn to *G. WATSONIANA*, page 49.

Sec. 24. Sepals white, filaments more than twice the length of the petals. Turn to G. NIVEA, page 54.

Sepals green to purplish, or if not, the filaments less than twice the length of the petals. Pass to sec. 25.

Sec. 25. Stamens equalling the petals; leaves bearing minute white stalked glands on their lower surface.

Pass to Sec. 26.

Stamens about twice the length of the petals; leaves without minute white stalked glands. Pass to sec. 27.

Sec. 26. Tube of flower narrow, cylindrical, 2-4 times as long as broad. Turn to G. COGNATA page 55.

Tube of flower bell-shaped, nearly twice as broad as long. Turn to G. IRRIGUA, page 55.

Sec. 27. Stamens and styles protruding well beyond the end of the sepals when these are extended.

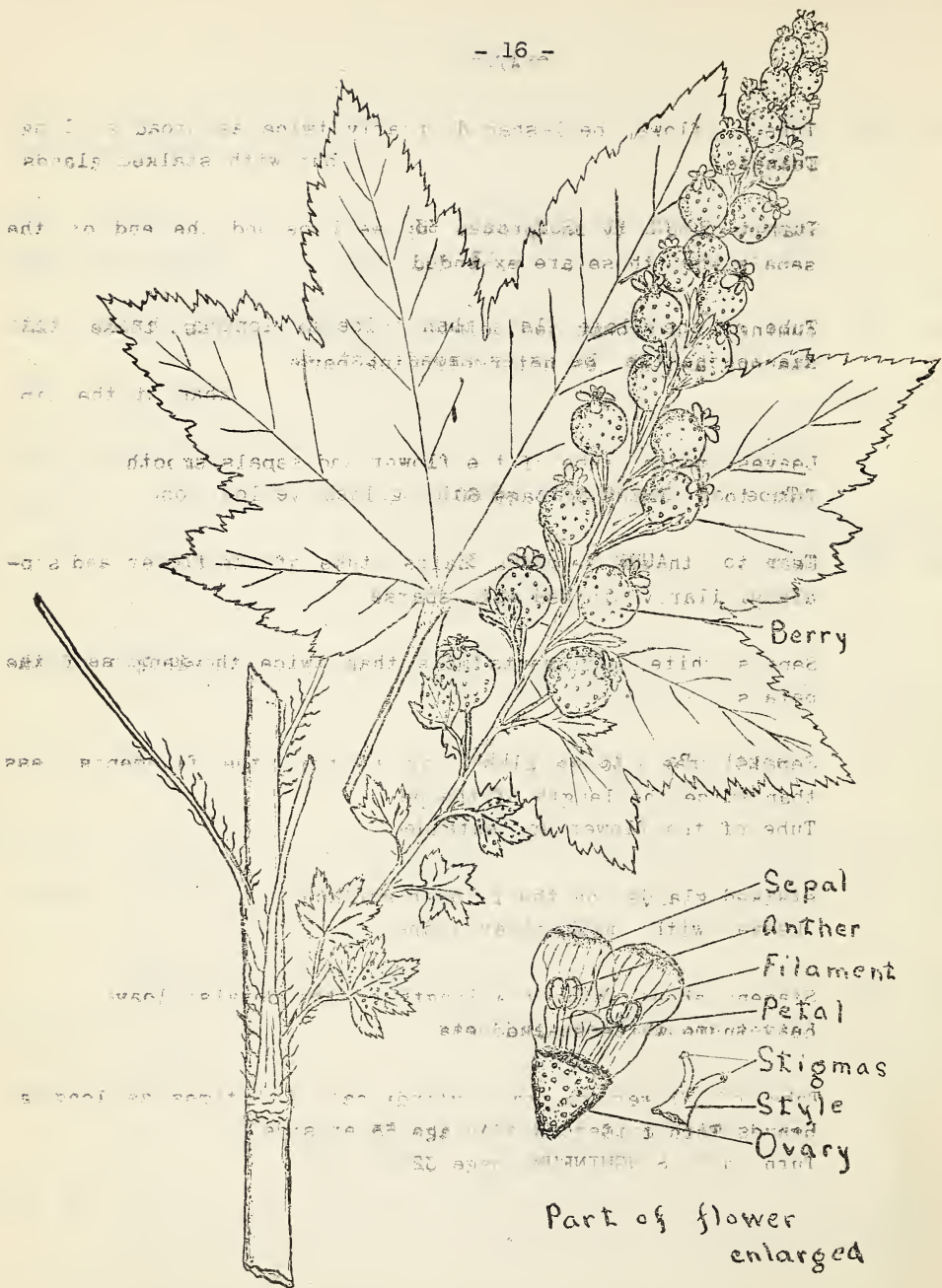
Turn to G. DIVARICATA, page 59.

Stamens and styles not protruding beyond the end of the extended sepals. Pass to sec. 28.

Sec. 28. Leaves smooth; tube of the flower and sepals smooth. Turn to G. INERMIS, page 60.

Leaves with sparse, long hairs, tube of the flower and sepals similarly clothed with sparse long hairs.

Turn to G. KLAMATHENSIS, page 60.



Ribes bracteosum

RIBES BRACTEOSUM DOUGL.

Stink Currant.

HEIGHT 5-10 feet or in dense shade 12-15 feet.

HABIT erect or the extremely long branches fallen or arched. young shoots heavy, often as thick as the little finger.

LEAVES when mature 5 inches or more across, deeply cut into 5-7 lobes, heart-shaped at the base, resin-dotted beneath.

FLOWER clusters 5-15 inches long, mostly erect.

FLOWERS loose in the cluster, small, inconspicuous, saucer-shaped

FRUITS black when ripe, bearing resin dots and coated with a white bloom.

NOTE: R. BRACTEOSUM, R. PETIOLARE, and R. NIGRUM, fall into one group characterized by the resin dots on both the under sides of the fruits. These points separate them from other currants of the state. R. ACERIFOLIUM has very small resin dots on the leaves but not on the fruits; thus it falls outside this group. R. BRACTEOSUM can be separated easily from R. PETIOLARE and R. NIGRUM by the large 5-7 pointed leaves.

HABITAT AND DISTRIBUTION: R. BRACTEOSUM is widely and probably quite generally distributed throughout western Oregon from the crest of the Cascade Mountains, in wet, well drained, shaded places. It will doubtless be found to some extent on the east slopes of the Cascades also.

On burns and cut-over lands and along highways these bushes grow in the open, exposed to the winds, thus enabling them when diseased with blister rust to disseminate spores readily. This and the fact that they are very susceptible to blister rust render them a serious menace to the growing of white and sugar pines.

RIBES PETIOLARE DOUGL.

Wild Black Currant.

HEIGHT 3-6 feet.

HABIT erect. Leaves 2-4 inches wide, heart-shaped at base, bearing resin dots on the under surface, otherwise smooth or nearly so, 3-5 lobed, the lobes sharp-toothed,

FLOWER CLUSTERS erect, showy, 3-6 inches long, densely flowered near the end, loosely so below.

FLOWERS white, saucer-shaped.

FRUITS black with a bloom and sessile resin dots, edible.

NOTE: See note under R. BRACTEOSUM. R. PETIOLARE is readily separated from R. NIGRUM by the long erect clusters of flowers or fruits. R. NIGRUM has a short, drooping, several-flowered cluster.

HABITAT AND DISTRIBUTION: R. PETIOLARE grows along shaded streams and in shaded marshes from the crest of the Cascade Mountains eastward through the state, confining itself to timberland, 2,000 to 6,000 feet in elevation. It is also found north of Mt. Hood.

This is a serious carrier of white pine blister rust.

RIBES NIGRUM L.

Cultivated Black Currant.

HEIGHT 3-6 feet.

HABIT erect.

LEAVES 2-4 inches wide, heart-shaped at the base, bearing resin dots on the under surface, otherwise smooth, 3-5 lobed, the lobes toothed.

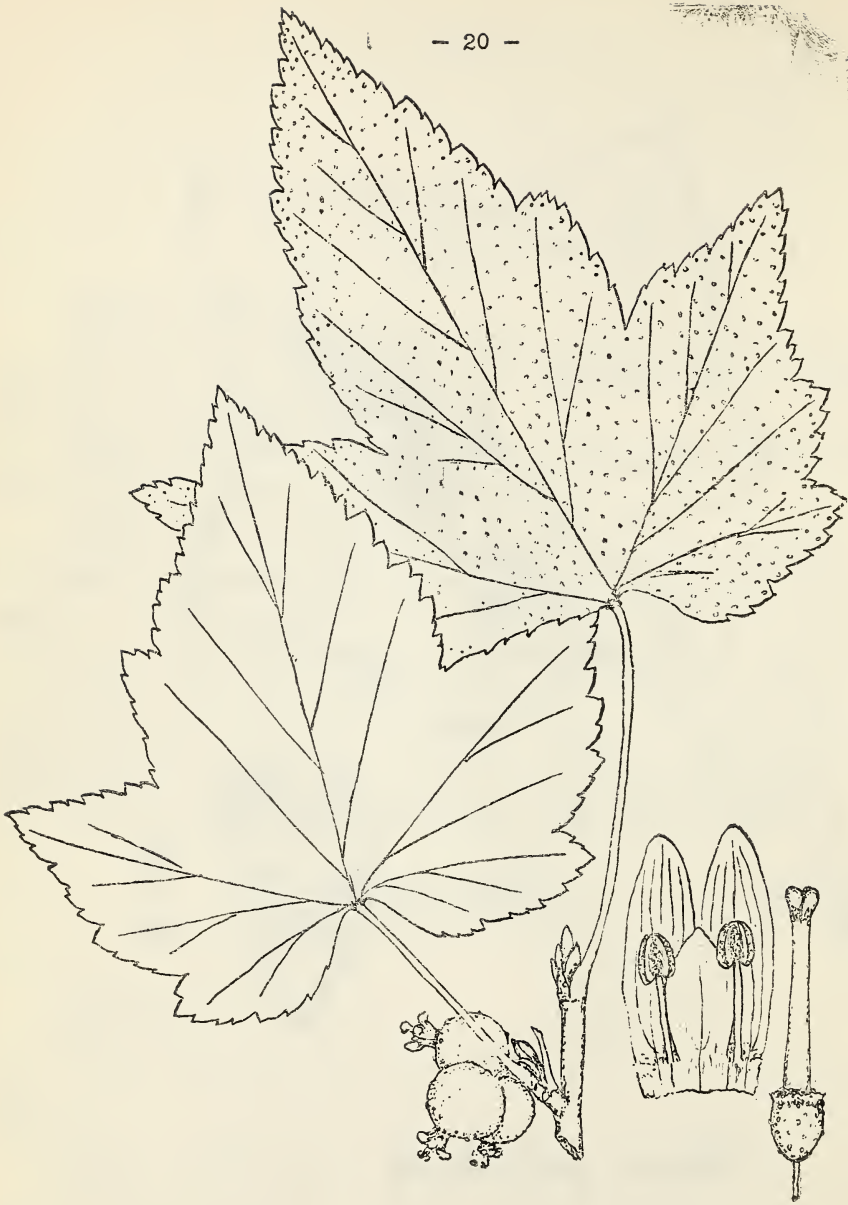
FLOWER CLUSTERS short, 1-2 inches long drooping, 5-10 flowered.

FLOWERS saucer-shaped, clothed with matted hairs on the tube and sepals; sepals purplish; petals white to reddish, shorter than the sepals.

FRUITS black with whitish bloom and resin dots, edible.



Ribes petiolare



Ribes nigrum



Ribes acerifolium

NOTE: See notes on R. BRACTEOSUM and R. PETIOLARE.

HABITAT AND DISTRIBUTION: R. NIGRUM is occasionally grown in gardens. It is a native of Europe that has been intensively cultivated in certain sections of the United States.

This plant should never be planted. It is a very serious carrier of white pine blister rust and its cultivation in Oregon is forbidden by law. When plantings or individual bushes are located the owner should destroy them at once.

RIBES ACERIFOLIUM HOWELL

Maple-Leaved Currant.

HEIGHT 2-5 feet.

HABIT erect.

LEAVES 3-5 lobed, heart-shaped at base and bearing light-colored resin dots below, (often visible only with a hand lens).

FLOWER CLUSTERS 5-15 flowered, the main stalk and individual flower stalks hairy and bearing gland-tipped hairs.

FLOWERS inconspicuous, saucer-shaped.

FRUITS black when ripe, bearing gland-tipped hairs and a white bloom.

NOTE: The absence of resin dots on the ovaries and fruits of this species separate it from the three preceding species; the resin dots on the leaves separate it from other currants of this region.

HABITAT AND DISTRIBUTION: Forming thickets on open slopes at altitudes of 3,000 - 6,000 feet, also along shaded streams and bordering belts of timber. Possibly to be found throughout the Cascades.

RIBES TRISTE PALL

Wild Red Currant.

HEIGHT 2-5 feet, but trailing stems often 8 or 10 feet long.

HABIT, creeping with only the ends and fresh growth erect.

LEAVES 3-6 lobed, 2-4 inches across, smooth above and nearly or quite so below, the edges of the leaf stalks bearing long crinkled hairs.

FLOWER CLUSTERS drooping, 5-15 flowered, all except the flowers having gland-tipped hairs.

FLOWERS small, saucer-shaped.

FRUITS smooth and red when ripe, resembling cultivated red currants in color and flavor.

NOTE: The trailing habit of this currant, and its smooth, red fruits serve to distinguish it from others. R. LAXIFLORUM has a trailing habit but has black, glandular fruits.

HABITAT AND DISTRIBUTION: Shaded stream banks and marshes, probably confined in Oregon to the northern end of the Cascade Mountains at altitudes of 3,000 - 6,000 feet.

RIBES AUREUM PURSH

Yellow-Flowering Currant.

HEIGHT 3-10 feet.

HABIT erect, in dense brush and willows sometimes almost twining.

LEAVES smooth and shining, light green, 1-2 inches wide, exceedingly variable from 3-lobed and wedge-shaped at the base to 5-lobed and heart-shaped at base.

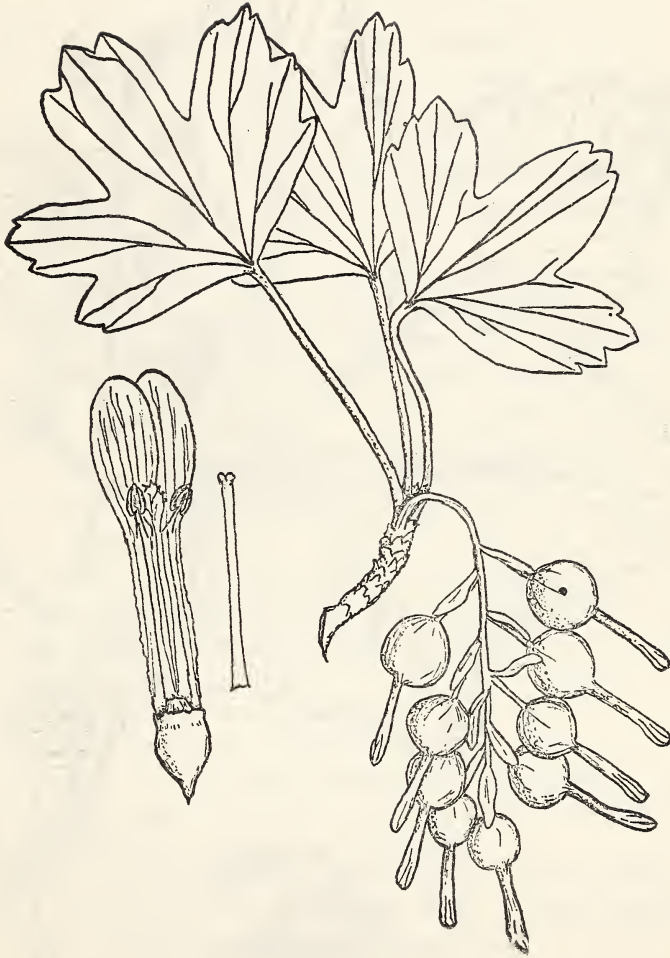
FLOWER CLUSTERS 5-15 flowered, erect or drooping, loosely arranged on the stalk.

FLOWERS usually bright golden yellow but occasionally streaked with red or this predominating. In the fresh flower, the main portion is long and tube-shaped and the sepals project out at right angles.

FRUITS black, red, or yellow when ripe (never varying on a single bush), smooth and edible.



Ribes triste



Ribes aureum



Ribes laxiflorum

NOTE: The smooth hairless, glandless leaves, smooth fruits and yellow flowers are characteristic of this species.

HABITAT AND DISTRIBUTION: Common throughout eastern Oregon east of the Cascade Mountains and along the Columbia River to The Dalles or lower. It adapts itself to a great variety of conditions, being often found in rather dense shade on the banks of streams, forming thickets in open, moist places, and exceedingly common on the talus slopes of lava hills in what appear to be very dry situations.

R. AUREUM is a congenial host for white pine blister rust. A very similar rust, the pinyon blister rust, attacks it severely. Any rusts on this species should be sent at once for identification to the Office of Blister Rust Control, Botany Department, O.A.C., Corvallis, Oregon.

RIBES LAXIFLORUM PURSH

Coast Trailing Currant.

HEIGHT 3-5 feet, trailing stems often longer.

HABIT erect or ascending only near the ends.

LEAVES 5-lobed, 2-3 inches across, somewhat hairy along the veins below, or smooth with age.

FLOWER CLUSTERS 8-15 flowered.

FLOWERS inconspicuous, saucer-shaped.

FRUITS black with a bloom, bearing stalked glands.

NOTE: The black fruits with stalked glands readily separate this plant from R. TRISTE. Also note its range.

HABITAT AND DISTRIBUTION: Damp situations in timber and burned-over areas throughout western Oregon west of the Cascade Mountains. Most abundant in the Coast Range and westward.

RIBES WOLFII ROTH. R.

Wenaha Currant.

A rather compact much-branched bush about $1\frac{1}{2}$ - $2\frac{1}{2}$ feet high, the clumps often 3 feet across; stems and branches stout, brown to gray, the year-old twigs shedding a thin gray papery layer of bark; young shoots minutely hairy, light brown.

LEAVES heart-shaped at base, circular in outline, 1 - $2\frac{1}{2}$ inches across, 3-5 lobed, the spaces between the lobes shallow, the lobes rounded and finely toothed, smooth above and below but minutely hairy on the edges, dotted with very small clear sessile glands beneath; leaf stems slender, longer than the leaves, minutely hairy.

FLOWER CLUSTERS $1\frac{1}{2}$ -3 inches long, erect, 8-15 flowered, hairy and glandular throughout; stem of individual flower less than $\frac{1}{2}$ inch long, bracts oblong, much longer than the individual flower stems; ovary densely clothed with short gland-tipped hairs; hypanthium clothed with short fine hairs; sepals about $\frac{1}{8}$ inch long, purplish white, oblong; petals nearly oval, less than half the length of the sepals.

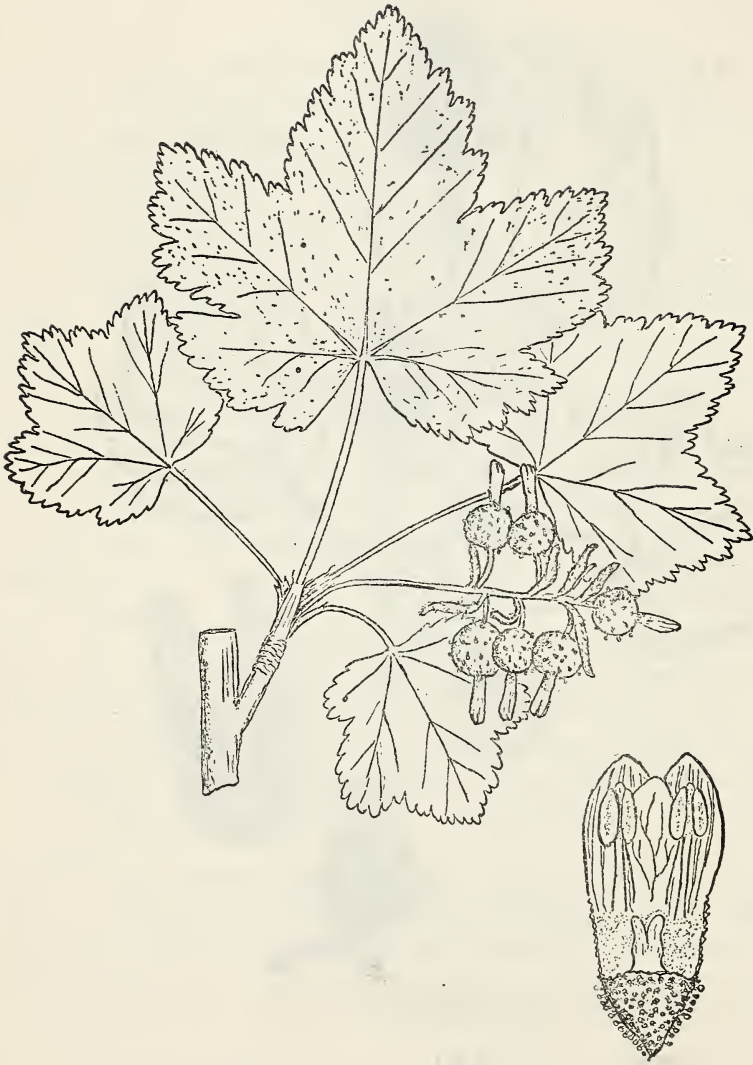
FRUITS black, $\frac{1}{8}$ - $\frac{1}{4}$ inch in diameter, clothed with short thick gland-tipped hairs.

NOTE: The above description applies to a currant found in the Blue Mountains of southeastern Washington which doubtless extends into adjacent Oregon. It is probable that this will prove to be a species new to literature, but for the present it must be referred to as *R. WOLFII*. The plant is entirely out of the range of this species, is a bush of very different habit and has strikingly different leaves.

HABITAT AND DISTRIBUTION: This currant is confined as far as known to a limited area of high plateau, semi-open timber land in the Wenaha National Forest of southeastern Washington. It should be found in adjacent Oregon.



Ribes wolfii



Ribes nevadense



Ribes sanguineum

RIBES NEVADENSE KELLOGG

Sierra Nevada Currant.

HEIGHT 4-10 feet.

HABIT erect.

LEAVES $1\frac{1}{2}$ -3 inches wide, 3-5 lobed, smooth above and nearly or quite so below.

FLOWER CLUSTERS densely 12-20 flowered.

FLOWERS rose-colored, bowl-shaped.

FRUITS black, with bloom and stalked glands.

NOTE: R. NEVADENSE is very similar to R. SANGUINEUM and R. GLUTINOSUM, but is readily distinguished by the smooth leaves, R. SANGUINEUM having matted hairs on the under side and R. GLUTINOSUM having stalked glands.

HABITAT AND DISTRIBUTION: Along shaded or semi-shaded streams in the timbered regions in Jackson, Josephine, Klamath, Coos, and Curry Counties.

RIBES SANGUINEUM PURSH

Red-Flowering Currant.

HEIGHT 4-12 feet.

HABIT erect.

LEAVES 3-5 lobed, $1\frac{1}{2}$ -3 inches wide, dark green above, sparsely clothed with short hairs, gray or white below due to matted hairs, often bearing stalked glands as well. Flower clusters erect or somewhat drooping, 10-15 flowered. Flowers bell-shaped, red.

FRUITS black, with a bloom and stalked glands.

NOTE: The matted hairs on the under surface of the leaves separate this species from R. NEVADENSE and R. GLUTINOSUM, its close relatives.

HABITAT AND DISTRIBUTION: Throughout western Oregon west of the Cascade Mountains and doubtless on the eastern side also, in semi-shaded and open timbered slopes and the timbered edges of the drier flats.

RIBES GLUTINOSUM BENTH.

Spicy Currant.

HEIGHT 4-12 feet.

HABIT erect.

LEAVES 3-5 lobed, $1\frac{1}{2}$ -3 inches wide, usually without matted hairs below, but clothed with stalked glands, especially along the veins below, sometimes nearly smooth, normally smooth or nearly so above.

FLOWER CLUSTERS 15-40 flowered, compact near the end but loose below, the main stalk and stalks to individual flowers having stalked glands.

FLOWERS red, rarely white, narrowly bell-shaped.

FRUITS black, bearing stalked glands and a white bloom.

NOTE: This is similar to R. SANGUINEUM but can be separated from it by the abundance of stalked glands on the leaves and flower clusters and by the absence of the pronounced matted condition of the hairs on the under surface of the leaves.

HABITAT AND DISTRIBUTION: Probably confined to Lincoln, Coos, and Curry Counties in the situation similar to those occupied by R. SANGUINEUM, but also forming thickets on hills along the beach.

RIBES VISCOSISSIMUM PURSH

Sticky Currant.

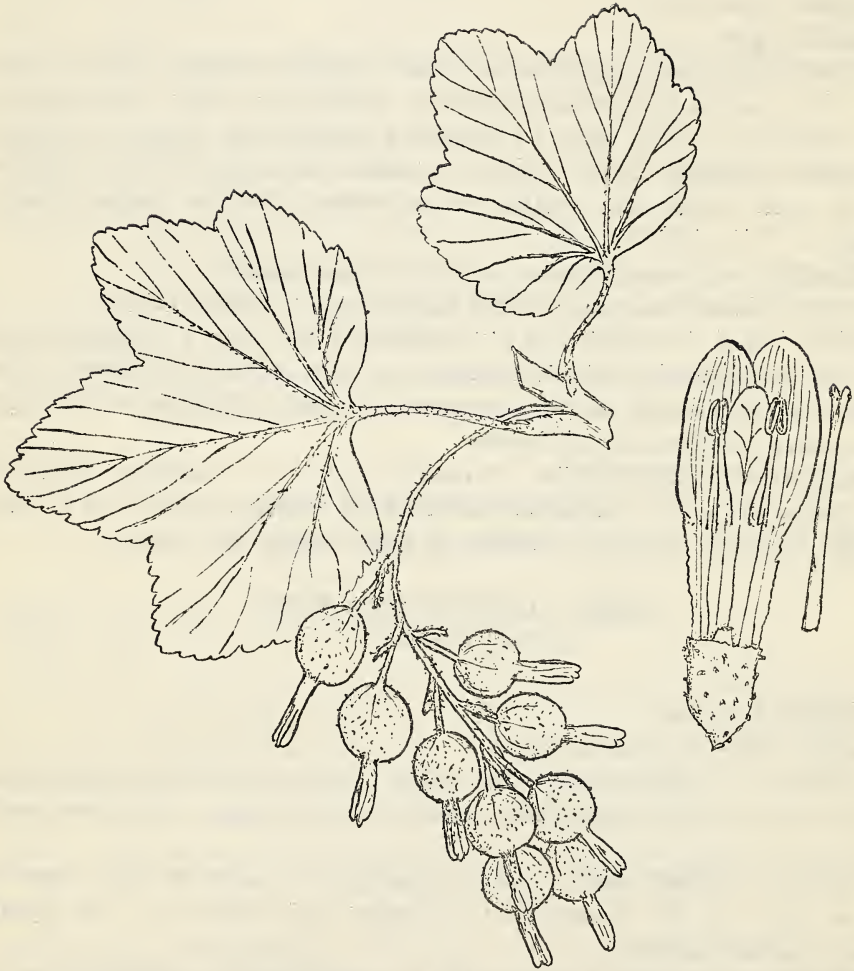
HEIGHT 3-5 feet.

HABIT erect but spreading.

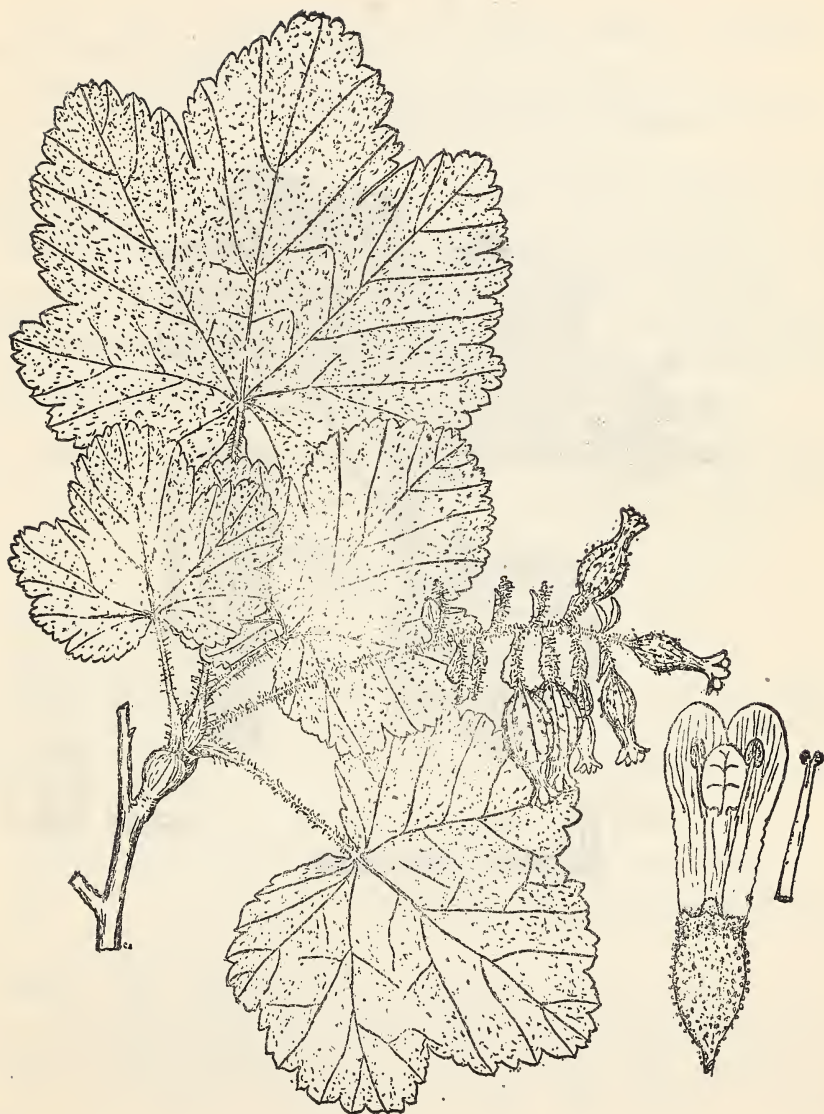
LEAVES 1-3 inches wide, 3-5 lobed, clothed with stalked glands, sparsely above, abundantly below; sticky to the touch, the lobes rounded.

FLOWER CLUSTERS short, loose, usually 3-8 flowered but occasionally as high as 20 flowered, the stalks and bracts of the cluster bearing stalked glands.

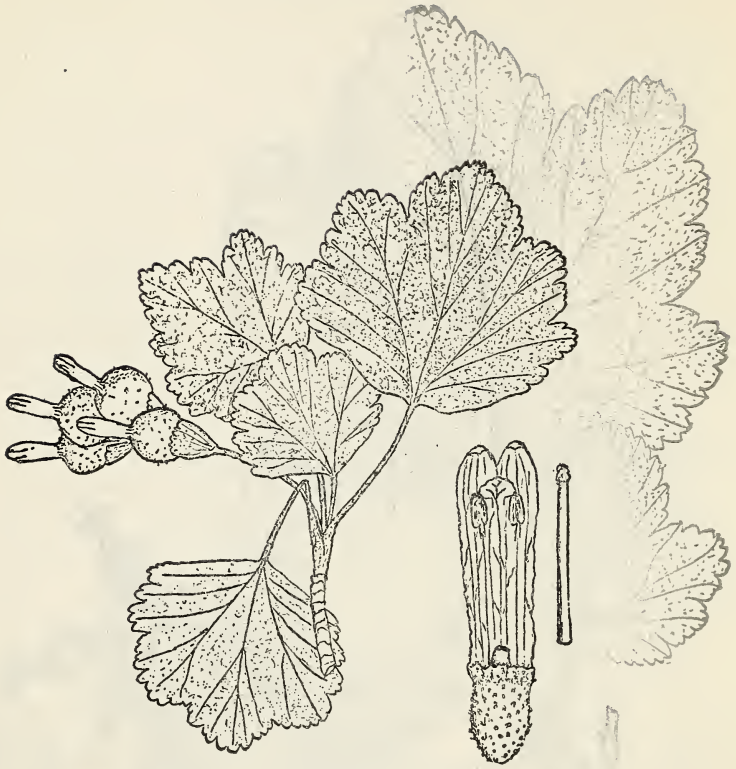
FLOWER when fresh a bell with a narrow mouth, appearing in the dried fruit broadly tubular, light green, sometimes tinged with purple when fresh.



Ribes glutinosum



Ribes viscosissimum



Ribes cereum

FRUITS black, bearing a bloom and stalked glands, noticeably ribbed and much longer than broad.

NOTE: The abundant stalked glands on the leaves and fruits, the broad green flowers, and long ribbed fruits are characteristic of this species.

R. HALLII Jancz., a species of doubtful merit, differs from R. VISCOSISSIMUM in having smooth fruits.

HABITAT AND DISTRIBUTION: Found generally throughout the yellow pine belt of the State on open rocky slopes, points, and ridges, often abundant in old burns, throughout the Cascades, in the Blue Mountains and the highlands joining the Blue Mountains and the Cascades, also in the Siskiyou Mountains.

R. HALLII is probably confined to the southern end of the Cascades.

RIBES CEREUM DOUGL.

Squaw Currant.

HEIGHT 3-5 feet.

HABIT erect but spreading, the branches stiff.

LEAVES grayish green, $\frac{1}{2}$ - $1\frac{1}{2}$ inches wide, only slightly lobed but evenly toothed, usually hairy on both faces and bearing stalked glands or sometimes smooth above, often bearing white, exuding, sessile glands above.

FLOWER CLUSTERS 1-5 flowered, drooping.

FLOWERS tubular, pink or whitish, covered with short hairs.

FRUITS red, smooth or occasionally with a few stalked glands.

NOTE: The range, color of the fruits and character of the leaves should distinguish this currant.

HABITAT AND DISTRIBUTION: Throughout eastern Oregon on open slopes and rocky points and ridges, also common in the Siskiyou Mountains and in the highlands west of Crater Lake. This species is to be found practically throughout the sugar pine region of southern Oregon.

RIBES ERYTHROCARPUM COVILLE & LEIBERG

Crater Lake Currant.

HEIGHT of erect portion less than 1 foot but the main stems long and trailing, forming carpets on exposed knolls.

LEAVES finely hairy and bearing stalked glands, 2 inches or less in width, 3-5 lobed, the lobes rounded.

FLOWER CLUSTERS 6-20 flowered, erect, short hairy.

FLOWERS yellow or salmon-colored, very small, saucer-shaped.

FRUITS red, bearing short stalked glands.

NOTE: The extremely low trailing character of this bush separates it from all other currants of the State.

HABITAT AND DISTRIBUTION: Exposed places at high altitudes in the Cascade Mountains of Klamath, Jackson, and Douglas Counties.

RIBES MONTIGENUM McCLATCHIE

Alpine Prickly Currant

HEIGHT 1-3 feet.

HABIT straggling. Stems bearing weak spines at the nodes and to some extent smaller ones between the nodes.

LEAVES $\frac{1}{2}$ - $1\frac{1}{2}$ inches wide, clothed above and below with stalked glands, 3-5 lobed, the lobes sharp pointed and toothed.

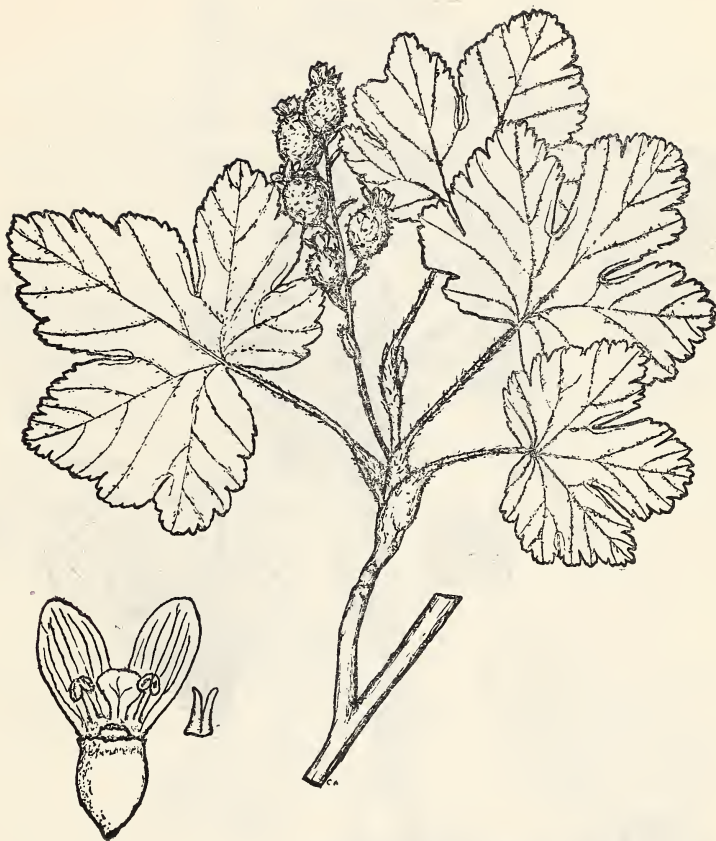
FLOWER CLUSTERS drooping, 5-10 flowered, the main stalk and flower stalks clothed with stalked glands.

FLOWERS green to purple, small, saucer-shaped.

FRUITS red, bearing stalked glands.

NOTE: This is a true currant (see key) but resembles a gooseberry in having spines and bristles. The stalked glands and red fruits distinguish it from R. LACUSTRE.

HABITAT AND DISTRIBUTION: Open slopes, rocky ridges, and mountain tops, at high altitudes in the Cascades and eastward.



Ribes erythrocarpum



Ribes montigenum



Pimpinella



Grossularia Menziesii

Ribes lanceolatum

RIBES LACUSTRE (PERS.) POIR.

Prickly Currant.

HEIGHT 3-5 feet.

HABIT erect or reclining and often trailing. Spines at the nodes weak, often bristly between the nodes.

LEAVES 1-2 inches wide, rarely more, smooth on both faces, deeply lobed or divided into 3-5 lobes, these pointed and sharply toothed.

FLOWER CLUSTERS 5-15 flowered, the main stalks and flower stalks bearing stalked glands.

FLOWERS small, green tinged with purple, saucer-shaped.

FRUITS black, bearing stalked glands.

NOTE: This is a true currant (see key) but resembles a gooseberry in having spines. Separate it from R. MONTIGENUM by the smooth leaves and black fruits.

HABITAT AND DISTRIBUTION: Exceedingly common at practically all altitudes in the timbered sections of Oregon. It is moisture-loving but is occasionally found in comparatively dry situations both in shade and in the open.

GROSSULARIA MENZIESII (PURSH) COVILLE
& BRITTON

Coast Prickly Fruited Gooseberry

HEIGHT 5-6 feet.

HABIT erect, spreading.

SPINES at nodes straight, sharp, about $\frac{1}{2}$ inch long. Internodal bristles abundant on young shoots, giving them a distinctly brown or purple color.

LEAVES deeply 3-5 lobed, cordate at the base, 1-1 $\frac{1}{2}$ inches wide, densely clothed with stalked glands below, usually slightly so above.

FLOWER CLUSTERS 1-2 flowered, drooping, the flower stalks bearing stalked glands.

FLOWERS showy, purple, the young ovary densely clothed with stiff gland-tipped hairs.

FRUITS a purple hue, densely bristly, and the bristles weak and many of them gland-tipped.

NOTE: This is one of the spiny-fruited gooseberries. It can be separated from the others of the group by the densely spiny young shoots and the abundant stalked glands on the under side of the leaves.

HABITAT AND DISTRIBUTION: Open slopes and skirting belts of timber in Coos, Curry, Douglas, and Lincoln Counties. Abundant on exposed hills along the beach.

GROSSULARIA CRUENTA (GREEN)
COVILLE & BRITTON

Shiny-leaved Gooseberry.

HEIGHT 4-6 feet.

HABIT erect, spreading.

SPINES confined to the nodes, the young wood otherwise smooth or slightly hairy.

LEAVES small $\frac{1}{2}$ -1 inch wide, smooth.

FLOWER CLUSTERS 1-2 flowered.

FLOWERS purplish red, showy.

FRUITS densely spiny, spines brown to purple.

NOTE: This is a relative of *G. MENZIESII* but has small smooth leaves and smooth young shoots. The small smooth leaves and erect habit separate it from *G. BINOMINATA*, and the small smooth leaves and dark spines on the fruit separate it from *G. WATSONIANA*.

HABITAT AND DISTRIBUTION: Extensive in all sorts of situations but preferring the open ridges and slopes on the western face of the Cascades of Lane County and southward. Also common in the Siskiyou Mountains.

GROSSULARIA BINOMINATA (HELLER) COVILLE & BRITTON
Siskiyou Gooseberry.

HEIGHT 2-5 feet.

HABIT trailing.



Grossularia cruenta



Grossularia binominata



Grossularia watsoniana



Grossularia lobbii

SPINES short, brown or gray, confined to the nodes.

LEAVES 1-2 inches wide, densely clothed with short white hairs below, moderately so above, 3-5 lobed, the lobes deeply toothed.

FLOWER CLUSTERS 1-3 flowered, the stalks hairy.

FLOWERS greenish white, the sepals hairy on the outside.

FRUITS densely clothed with straw-colored spines.

NOTE: The trailing habit of this plant readily distinguishes it from the other prickly fruited gooseberries.

HABITAT AND DISTRIBUTION: Forests of Jackson and Josephine Counties. Comparatively rare.

GROSSULARIA WATSONIANA (KOEHNE)

COVILLE & BRITTON

Mt. Adams Gooseberry.

HEIGHT 3-5 feet.

HABIT erect, spreading.

SPINES confined to the nodes, short, straight, light brown.

LEAVES sparingly hairy along the veins below, 1-1½ inches wide, deeply 3-5 lobed, the lobes deeply toothed.

FLOWER CLUSTERS 1-3 flowered, the stalks bearing stalked glands.

FLOWERS inconspicuous, the young ovary clothed with weak gland-tipped bristles.

FRUITS densely clothed with straw-colored spines.

NOTE: The erect habit of this bush and its straw-colored spines on the fruit separate it from other members of this group.

HABITAT AND DISTRIBUTION: Occurring in wet places or north slopes in semi-open forests in the Cascade Mountains south of the Columbia River.

GROSSULARIA LOBBII (A. GRAY)

COVILLE & BRITTON

Gummy Gooseberry.

HEIGHT 3-6 feet.

HABIT erect, spreading.

SPINES rather stout, straight, brown, confined to the nodes.

LEAVES ½-1½ inches wide, the under surface and leaf stalks some-

what gummy because of very short gland-tipped hairs or stalked glands, the upper surface occasionally slight hairy, 3-5 lobed.

FLOWER CLUSTERS 1-2 flowered.

FLOWERS large, showy, purple-red.

FRUITS densely clothed with large stalked glands, very gummy. large.

NOTE: The gummy fruits bearing no spines characterize *G. LOBBII*.

HABITAT AND DISTRIBUTION: Open slopes and burned-over areas from the crest of the Cascades to the coast. Possibly occurring also on the eastern slopes. Often very abundant.

GROSSULARIA MARSHALLII (GREENE) COVILLE & BRITTON

Applegate Gooseberry.

HEIGHT 3-6 feet.

HABIT erect, spreading.

SPINES short, confined to the nodes.

LEAVES 1-2 inches wide, thin, slightly hairy along the veins below, deeply 3-5 lobed, the lobes blunt-toothed.

FLOWERS borne singly, purple or greenish.

FRUITS black, with remote spines and when younger with stalked glands also.

NOTE: The remote spines on the fruit of this bush are characteristic.

HABITAT AND DISTRIBUTION: Very extensive in open slopes in certain localities of Jackson and Josephine Counties.

GLOSSULARIA VELUTINA (GREENE) COVILLE & BRITTON

Desert Gooseberry.

HEIGHT 2-6 feet.

HABIT erect or widely spreading with stems recurved.

LEAVES very small, usually about $\frac{1}{2}$ inch wide, grayish-green, clothed with short hairs on both sides, 3-5 lobed, each lobe ending in three blunt teeth.



Grossularia marskallii



Grossularia velutina



Grossularia nivea

SPINES confined to the nodes, often stout, long and somewhat curved.

FLOWER CLUSTERS 1-3 flowered, very short.

FLOWERS pale yellow, hairy without, ovary densely hairy, sometimes with stalked glands.

FRUITS yellow or gray, usually densely hairy, ripening almost dry.

NOTE: The small grayish-green leaves with distinctly three-toothed lobes are excellent marks for this bush.

HABITAT AND DISTRIBUTION: This bush grows on open rocky ridges and slopes in arid regions. It is abundant in the southern, southeastern, and eastern parts of Oregon. A gooseberry similar to this but with more deeply divided smooth leaves grows in northeastern Oregon. Probably this will prove to be a distinct species.

GROSSULARIA NIVEA (LINDL.) SPACH.

Snake River Gooseberry.

HEIGHT 5-10 feet.

HABIT erect, the stems and branches slender and graceful.

SPINES confined to the nodes, stout, straight, shining, brown or purplish.

LEAVES smooth or nearly so, wedge-shaped at the base or straight across, 3-5 lobed, the lobes few-toothed.

FLOWER CLUSTERS 1-4 flowered, the main stalks and individual flower stalks long and slender.

FLOWERS white, bell-shaped, the stamens and style-branches protruding well beyond the extended sepals even in the dried flower attached to the fruit.

FRUITS smooth, bluish-black.

NOTE: The long slender stalks to the flower clusters and flowers, the leaves wedge-shaped at the base, the dark spines and the protruding stamens and style-branches mark this gooseberry.

HABITAT AND DISTRIBUTION: A very common gooseberry along the Columbia and Snake Rivers and their tributaries in northeastern and eastern Oregon.

GROSSULARIA COGNATA (GREEN) COVILLE & BRITTON

Umatilla gooseberry.

HEIGHT 5-10 feet.

HABIT erect but widely spreading.

SPINES on the nodes often stout, bristles usually abundant on the young wood and often retained for sometime, rarely absent on young wood.

LEAVES 1-2 inches wide, smooth and sparsely hairy above, often whitened with short woolly hairs below, bearing also minute white stalked glands on the lower surface, heart-shaped at base, deeply 3-5 lobed, the lobes blunt-toothed.

FLOWER CLUSTERS 2-5 flowered.

FLOWERS tubular, light green to purple, inconspicuous.

FRUITS smooth, purple to black.

NOTE: Notice in the key that the minute white stalked glands on the under side of the leaves are characteristic of *G. COGNATA* and *G. IRRIGUA*. Separate *G. COGNATA* from *G. IRRIGUA* by the bristly young wood and tube-shaped flower of the former contrasted with the smooth young wood and bell-shaped flower of the latter.

HABITAT AND DISTRIBUTION: Possibly widely distributed along streams in eastern Oregon. Most frequent along the Umatilla and its tributaries.

GROSSULARIA IRRIGUA (DOUGL.) COVILLE & BRITTON

Inland Black Gooseberry.

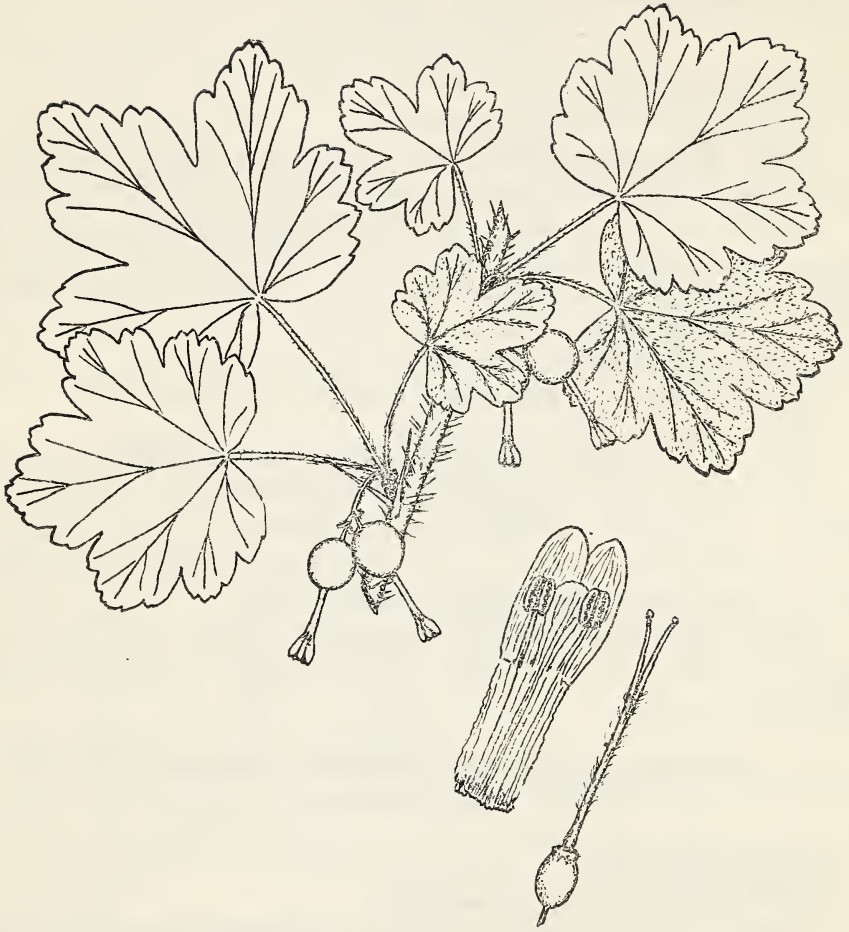
HEIGHT 3-10 feet.

HABIT erect but widely spreading.

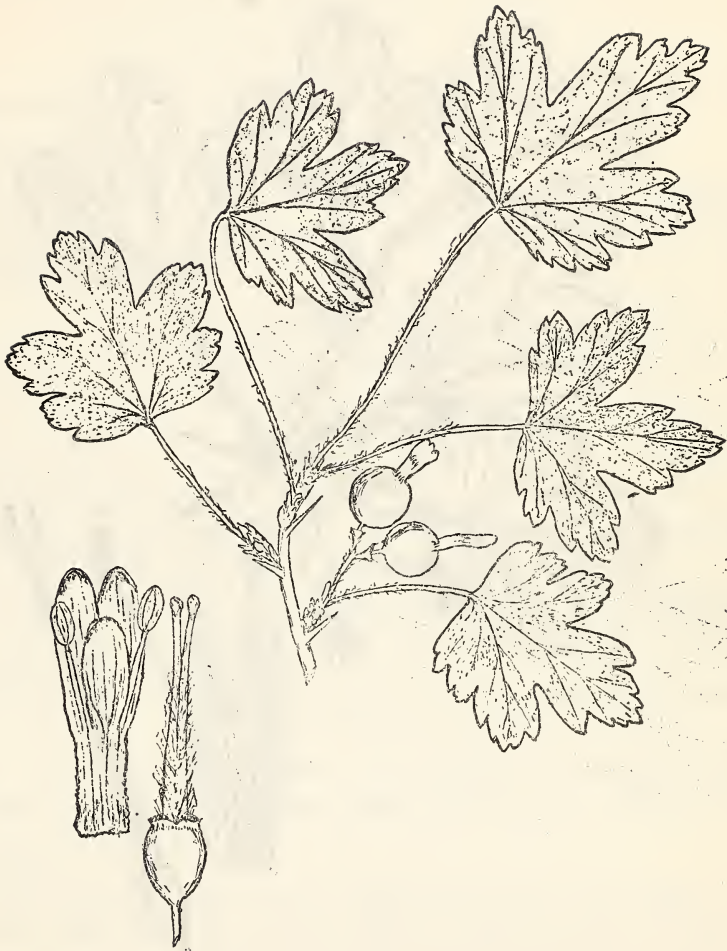
SPINES on nodes varying from short and weak to stout, internodal bristles usually absent.

LEAVES 1-2 inches wide, densely hairy below, but except for minute white stalked glands, without stalked glands, 3-5 lobed, the lobes varying from narrow and pointed to broad and blunt, the lobes coarsely toothed.

FLOWER CLUSTERS 1-3 flowered.



Grossularia cognata



Grossularia irrigua.



Grossularia divaricata

FLOWERS greenish white, not showy, bell-shaped, fruit smooth, purple or black.

NOTE: Read the note on *G. COGNATA*.

HABITAT AND DISTRIBUTION: Described from the Blue Mountains of northeastern Oregon. Possibly occupying stream banks over a wide range of eastern Oregon.

GROSSULARIA DIVARICATA (DOUGL.)

COVILLE & BRITTON

Coast Black Gooseberry.

HEIGHT 6-10 feet.

HABIT erect; spreading.

NODAL SPINES usually very heavy, long, straight or curved, brown or purple, internodal bristles only occasionally present.

LEAVES 1-2½ inches wide, the upper surface usually bearing sparse long hairs, the lower short hairs along the veins, at none, 3-5 lobed, the lobes rather sharply toothed.

FLOWER CLUSTERS drooping, 2-4 flowered, the stalks quite long and slender.

FLOWERS not showy, bell-shaped, the stamens and style-branches protruding well beyond the extended sepals even in the dried flower attached to the fruit.

FRUIT smooth, black.

NOTE: The exerted stamens and style-branches of this plant separate it from other members of the group. Notice that it does not bear the minute white stalked glands on the under surface of the leaves.

HABITAT AND DISTRIBUTION: Along streams and swamps skirting wooded sections throughout eastern Oregon from the base of the Cascade mountains. Abundant at intervals along the beach.

GROSSULARIA INERMIS (RYDB.) COVILLE & BRITTON

White-Stemmed Gooseberry.

HEIGHT 3-6 feet.

HABIT erect, spreading.

NODAL SPINES weak, sometimes wanting, internodal bristles usually absent.

LEAVES smooth or straight across the base, 3-5 lobed, the lobes round toothed.

FLOWER CLUSTERS short, drooping, 1-4 flowered.

FLOWERS green, bell-shaped, sepals smooth.

FRUITS smooth, wine-colored.

NOTE: The smooth leaves and flowers of this plant readily separate it from *G. KLAMATHENSIS* with its hairy leaves and hairy sepals on the flowers.

HABITAT AND DISTRIBUTION: Probably widely distributed along mountain streams throughout eastern Oregon.

GROSSULARIA KLAMATHENSIS COVILLE

Klamath Gooseberry.

HEIGHT 3-15 feet.

HABIT erect, spreading with long recurved branches.

NODAL SPINES often absent, usually weak but occasionally stout, internodal bristles absent.

LEAVES 1-2 inches wide, smooth above but quite hairy below, 3-5 lobed, the lobes spreading leaving open sinuses, coarsely toothed.

FLOWER CLUSTERS 2-5 flowered, the stalks long and slender.

FLOWERS green or purplish, small, bearing long crinkled hairs on the sepals and hypanthium.

FRUITS smooth, black with a bloom.

NOTE: See note on *G. INERMIS*.

HABITAT AND DISTRIBUTION: This is the common gooseberry along streams and skirting the lake shores in the southern end of the Cascade Mountains and the Siskiyou. It also occurs along the Deschutes River as far north as Madras and probably is more widely distributed than thus indicated.



Grossularia inermis



Grossularia klamathensis

RUSTS OCCURRING ON RIBES IN THE WEST.

By Ellsworth Bethel, Pathologist,

Office of Forest Pathology.

Ribes are attacked not only by white pine blister rust but by seven other rusts which may be found in the West. It is desirable that persons interested in blister rust be able to distinguish these various rusts on Ribes.

Rusts are themselves plants, which grow as parasites on other plants. They grow within the tissues of the host plant, and at certain seasons send out to the surface of the leaf, stem, or fruit very small reproductive bodies known as spores. These spores occur in definite pustules known as sori (singular sorus). The sorus has a thin, membranous covering known as the peridium which later ruptures to free the spores. The color of a rust sorus is determined either by the color of the peridium or of the spores, and may be white, black, orange, red, or yellow. The sori often scarcely project beyond the surface of the leaf or stem, but in other cases appear as long cluster cups, or as telial horns as in white pine blister rust.

The sori, depending upon the type of spores produced, are termed pycnia (0), aecia (I), uredinia (II), and telia (III). There are also certain types of aecia recognized, as follows: An aecium whose peridium disappears early, leaving a naked pustule of spores, is called a caeoma (example, the aecial stage of MELAMPSORA CONFLUENS). If the aecium is cup-shaped and the peridium toothed after breaking it is called an aecidium. The name peridermium is applied to certain rusts on conifers and closely related plants whose peridia split or break irregularly. Peridermiums may occur on either the leaves or stems and branches. In the first case they are termed foliicolous, meaning leaf-inhabiting, and in the second caulicolous, or stem-inhabiting. Peridermiums occurring in the branches and trunks often give rise to large hypertrophies, or galls, or "witches' brooms." Foliicolous Peridermiums produce Coleosporiums, while caulicolous species give rise to Cronartiums.

Six of the rusts of Ribes are heteroecious, that is, they attack

two hosts, with pycnia and aecia on one host and uredinia and telia on the other. The other two rusts are autoecious, that is, they occur on only one host, having telia only.

Aeciospores of these various rusts generally appear from the middle of April to the middle of June, though the time varies with the rust, the altitude, season, and climate. For example, the aecia of MELAMPSORA CONFLUENS may not be evident east of the Cascades for a month or two after they have disappeared from the cooler, more humid coast region. The uredinia and telia of Coleosporiums and Cronartiums are not likely to be found in abundance before August or September or later.

The following is a key to the rusts on Ribes which are found in the Rocky Mountains and westward.

*Heteroecious Rusts With All Spore Forms.

I. Pycnia and aecia on leaves of Ribes.

A. Aecia borne in cluster cups which are covered by the peridium until maturity.

1. Aecia short, broad, densely aggregated, yellowish to pale red.....1. PUCCINIA GROSSULARIAE.

2. Aecia long, slender, orange-red.....2. PUCCINIA MICRANTHA.

B. Aecia not borne in definite cluster cups, peridium disappearing early, forming naked pustules of the caeoma type.....

.....3. MELAMPSORA CONFLUENS.

II. Uredinia and telia on leaves of Ribes.

A. Peridium of the uredinial or telial pustule vanishing early.

Uredinia appearing as large flat naked pustules, developing singly or in concentric rings, and becoming red and waxy in the telial stage.....4. COLEOSPORIUM RIBICOLA.

B. Peridium of the uredinial pustule persistent, the spores liberated through a small opening.

1. Uredinia in irregular groups of small pustules; telia appearing later as hair-like horns, giving a fuzzy aspect to the under side of the leaf.....5. CRONARTIUM RIBICOLA.

The white pine blister rust.

- 2. Uredinia and telia as in CRONARTIUM RIBICOLA and scarcely distinguishable from it. However, in regions remote from the aecial hosts - pinyon pines - will probably be found on RIBES AUREUM only, and not usually evident until after the first of September.....6. CRONARTIUM OCCIDENTALE.

The pinyon blister rust.

** Autoecious Rusts Having Only Telia

I. Telia on leaves of Ribes.

- A. Telia black, mostly hypophyllous, occurring only on RIBES LACUSTRE.....7. PUCCINIA PARKERAE.
- B. Telia, mostly epiphyllous, purplish or deep brown to black, occurring only on RIBES TRISTE.....8. PUCCINIA RIBIS.

Note: It is extremely difficult to distinguish CRONARTIUM RIBICOLA from C. OCCIDENTALE in the uredinial or telial stage. Any Cronartium which is found on Ribes should be potentially regarded as white pine blister rust until proved otherwise. Any blister rust scout finding such a rust should immediately report it to the man in charge of his work. Specimens of all rusts on Ribes should be sent to the Office of Blister Rust Control, Botany Department, Oregon Agricultural College, Corvallis, Oregon

Life Cycles of the Rusts on Ribes.

1. PUCCINIA GROSSULARIAE.

- 0 and I on leaves of Ribes.
- II and III on sedge (Carex.)

2. PUCCINIA MICRANTHA.

- 0 and I on leaves of Ribes.
- II and III on rice-grass (Oryzopsis).

3. MELAMPSORA CONFLUENS.
0 and I on leaves of Ribes.
II and III on leaves of willow (Salix).
4. COLEOSPORIUM RIBICOLA.
0 and I on needles of nut pines or pinyons.
II and III on leaves of Ribes.
5. CRONARTIUM RIBICOLA.
0 and I on stems and branches of white (5 needled) pines.
II and III on leaves of Ribes.
6. CRONARTIUM OCCIDENTALE.
0 and I on stems and branches of pinyon or nut pines.
II and III on leaves of Ribes.
7. PUCCINIA PARKERAE.
III on leaves of Ribes lacustre.
8. PUCCINIA RIBIS.
III on leaves of Ribes triste.

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GLOSSARY AND INDEX

- ACERIFOLIUM, page 22.
AECIA, Spore-containing structures, See explanation, page 63.
AECIOSPORE, See explanation, page 64.
ALPINE PRICKLY CURRANT, Page 38.
ANTHER. The organ of the flower which bears the pollen See illustration under RIBES BRACTEOSUM, page 16.
APPLEGATE GOOSEBERRY. Page 50.
AUREUM. Page 23.
AUTOEJOUS. See explanation, page 65.
BERRY. A simple fruit in which the skin incloses the seed in a pulpy

mass. The gooseberry and the tomato are good examples.

BINOMINATA. Page 44.

BLACK CURRANT. Page 1.

BLADE. The expanded portion of a leaf.

BLOOM. A white, powdery appearing substance on the surface of some fruits. It rubs off readily.

BRACT. A small leaf or leaf-like structure below a flower or fruit or at the base of a stalk or similar structure.

BRACTEOSUM. Page 17.

CAEOMA. See explanation, page 63.

CAULICOLOUS. See explanation, page 63.

CEREUM. Page 37.

CLUSTERCUP. See explanation, page 63.

COAST BLACK GOOSEBERRY. Page 59.

COAST PRICKLY FRUITED GOOSEBERRY. Page 43.

COAST TRAILING CURRANT. Page 27.

COGNATA. Page 55.

COLEOSPORIUM. See explanation, page 63.

COLEOSPORIUM RIBICOLA. Page 64.

CONCENTRIC. Forming circles about a common center.

CONIFER. A plant bearing cones. A term applied to pines, firs, spruce, etc.

CRATER LAKE CURRANT. Page 38.

CRONARTIUM. See explanation, Page 63.

CRONARTIUM OCCIDENTALE. Page 65.

CRONARTIUM RIBICOLA. Page 64.

CRUENTA. Page 44.

CULTIVATED BLACK CURRANT. Page 18.

DESERT GOOSEBERRY. Page 50.

DICHOTOMOUS. Branched into two similar parts. The keys given in the first of this booklet are dichotomous; e.g., Section 1 is divided into two similar parts; Section 2 and 17, to which these refer, are each similarly divided into two, and so on.

DIVARICATA. Page 59.

EPIPHYLLOUS. Born on the upper side of the leaf.

ERYTHROCARPUM. Page 38.

EXSERTED. Extending to the outside from within. The stamens and pistils are exserted if they protrude beyond the ends of the sepals when they are extended.

EXUDING. The gradual pushing out of a substance from within; usually through an opening or pore, as of a gum or resin, sticky material or liquid.

FILAMENT. The portion of the stamen between the anther and the tube of the flower. The stem portion of the stamen. See illustration of RIBES BRACTEOSUM, Page 16.

FOLIICOLOUS. See explanation, Page 63.

GLAND. An organ that excretes some substance or seems to do so. The glands on leaves and fruits may be stalked or without stalks and may give the plant a distinct odor and stickiness.

GLAND-TIPPED. Applied here to hairs or spines which bear glands on their tips.

GLANDULAR. Bearing glands or of the nature of glands.

GLUTINOSUM. Page 33.

GROSSULARIA. True gooseberries. Page 2.

GUMMY GOOSEBERRY. Page 49.

HABITAT. Type of country in which a plant grows.

HALLII. Page 37.

HETEROECIOUS. See explanation. page 64.

HUMIDITY. The condition of dampness. Usually applied to the dampness of the air.

HYPANTHIUM. The portion of the flower just above the ovary or young fruit. It is formed by the union of the sepals at their bases. It is also called the tube of the flower.

HYPERTROPHIES. Enlargements or swellings caused by disease.

HYPOPHYLOUS. Borne on the under side of the leaf.

INERMIS. Page 60.

INLAND BLACK GOOSEBERRY. Page 55.

IRRIGUA. Page 55.

KLAMATH GOOSEBERRY. Page 60.

KLAMATHENSIS. Page 60.

LACUSTRE. Page 43.

LAXIFLORUM. PAGE 27.

LOBBII. Page 49.

LOBE. A projecting portion of a leaf or similar structure. The leaves of currants and gooseberries usually have 3 to 5 main projecting portions or lobes.

MAPLE-LEAVED CURRANT. Page 22.

MARSHALLII. Page 50.

MELAMPSORA See explanation page 64.

MELAMPSORA CONFLUENS. Page 64.

MENZIESII. Page 43.

MONTIGENUM. Page 38.

MT. ADAMS GOOSEBERRY. Page 49.

NEVADENSE. Page 32.

NIGRUM. Page 18.

NIVEA. Page 54.

NODE. The portion of a stem or branch from which leaves or branches arise. The portion between nodes is called in internode.

OVARY. The portion of the flower which becomes the fruit. Page 16.

PETAL. One of the leaves or parts of the inner whorl of leaves of the flower. See illustration of RIBES BRACTEOSUM. Page 16.

PERIDERMIIUM. See explanation, page 63.

Peridium. See explanation, page 63.

PETIOLARE. Page 18.

PINYON BLISTER RUST. Page 65.

PISTIL. Here referring to the organ in the center of the flower. It should be understood to include the ovary also.

POTENTIALLY. In effect, as far as the result is concerned.

PRICKLY CURRANT. Page 43.

PUCCINIA GROSSULARIE. Page 64.

PUCCINIA MICRANTHA. Page 64.

PUCCINIA PARKERAE. Page 65.

PUCCINIA RIBIS. Page 65.

PUSTULE. An elevation resembling a pimple or blister.

RYCNIA. See explanation, page 63.

RECURVED. Applied to stems whose tops bend over toward the ground.

RED-FLOWERING CURRANT. Page 32.

RESIN DOT. A gland, without stalk, which resembles resin.

RIBES. Technical name of the true currants. Page 3.

RUSTS. Certain fungus diseases of plants. Page 63.

SANGUINEUM. Page 32.

SEPAL. One leaf of the outer whorl or circle of leaves of the flower.

In the currants and gooseberries the five sepals of the flower constitute the showy portion. They unite at their bases to form the tube or hypanthium. See illustration of RIBES BRACTEOSUM, page 16.

SESSILE. Sitting; applied here to glands which have no stalks.

SIERRA NEVADA CURRANT. Page 32.

SISKIYOU GOOSEBERRY. Page 44.

SHINY-LEAVED GOOSEBERRY. Page 44.

SINUS. Here, a space between two lobes of a leaf.

SMOOTH. In this booklet, usually referring to the absence of hairs or stalked glands.

SNAKE RIVER GOOSEBERRY. Page 54.

SORUS. See explanation, page 63.

SPICY CURRANT. Page 33.

SPORE. See explanation, page 63.

SQUAW CURRANT. Page 37.

STALKED GLAND. A gland borne on a hairlike structure or stem.

STAMEN. The stamen is composed of the filament and anther. See illustration on page 16.

STICKY CURRANT. Page 33.

STIGMA. The upper end of the style. See illustration of RIBES BRAC-
TEOSUM, page 16.

STINK CURRANT. Page 17.

STYLE. The stalklike portion in the center of the flower. In the currants and gooseberries it is often divided into two branches. These may be separate nearly or quite to the base. See illustration of RIBES BRACTEOSUM, page 16.

SUSCEPTIBILITY. The ability to take disease or the inability to resist it.

TELIA. See explanation, page 63.

TELIAL. See explanation, page 63.

TRISTE. Page 23.

TUBE OF FLOWER. Hypanthium, made by the union of the sepals at their bases.

UMATILLA GOOSEBERRY. Page 55.

UREDINIA. See explanation, page 63.

VELUTINA. Page 50.

VISCOSISSIMUM. Page 33.

WATSONIANA. Page 49.

WENAHA CURRANT. Page 28.

WHITE PINE BLISTER RUST. Page 1.

WHITE-STEMMED GOOSEBERRY. Page 60.

WHORL. A complete circle or leaves or similar structures.

WILD BLACK CURRANT. Page 18.

WILD RED CURRANT. Page 23.

WOLFII. Page 28.

YELLOW FLOWERING CURRANT. Page 23.

